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XVI. ACCOUNT

OF METEOROLOGICAL OBSERVATIONS, MADE IN GEORGIA AND SOUTH CAROLINA.

BY ABIEL HOLMES, D. D. F. A. A.

FROM meteorological observations, made during my residence in Georgia, I respectfully offer to the ACADEMY the following selections and results. For the imperfection of them, my ill health, my absence from that country during the summer and autumnal months, and the accident of breaking my thermometer, must be my apology. Imperfect as they are, they give some general idea of the temperature of the climate of Georgia, and are confirmatory of the accounts, which have been published, of the temperature of Carolina. I have taken the liberty to subjoin a few thermometrical observations, made at Savannah, in 1785, by Timothy Matlack Esq.* who favoured me with a copy of them. These, with some additional observations of other literary men respecting the heat and cold of South Carolina, will, I persuade myself, make some amends for the deficiency of my own memoir.

Cambridge, 10 *January*, 1809.

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* Formerly Secretary of the American Philosophical Society.

Observations, made at Midway, in Georgia, thirty miles southwestwardly from Savannah. The thermometer used was Fahrenheit's, exposed in a north shade.

1787	Highest.	Lowest.	Remarks.
Dec.	62	30	Winds generally N. W. Observations from the 14th through the month.
1788 Jan.	64	22	Winds generally N. W. On the 6th the mercury was at 32°, wind N. the ground was frozen, and ice remained in the ditches all day. Observations for 10 days only in this month.
Feb.		20	Observations three days only. Thermometer broken.
1789 Dec.	76	28	Winds generally N. W. and weather fair. Latter part of the month easterly winds, cloudy, and some rain. Mercury at and below 32° four days in this month.
1790 Jan.	81	26	Winds S. W. and N. W. Jonquils, jessamins, and woodbines in blossom. Mercury at and below 32° seven days in this month.
Feb.	82	28	Winds N. W. and S. W. On the 23d the mercury rose to 81°; and on the 17th and 18th it rose to 80°.
March	80	31	Winds southerly. Frost on the 4th, when the mercury was at 31°; but the weather generally mild, sometimes warm.
April	66		Only one observation this month.
May	93	70	Winds southerly. The mercury rose to 93° on the 28th and 29th; and was at and above 90° four days in the month.
June	96	64	Winds generally S. E. Weather fair. Mercury was at and above 80° twenty days in this month. On the 2d I was at Sunbury, where at 3 o' clock P. M. there was a violent thunder storm, attended with hail. Two white men and one negro were killed by lightning. The wind was at N. E. The mercury, at 2 o' clock, at 84°; at 3 o'clock, at 74°.
July	86		The highest ascent of the mercury in observations of nine days only.
Dec.	64	26	Winds from N. W. to N. E. Observations begin at the 13th. On the 19th the mercury fell to 28°; wind N. E. and fair. Great frost. Ice. Frost also on the 23d; mercury at 31°. The mercury was at and above 32° four days in this month, after the 13th. On the 31st a snow storm began five minutes before 8 A. M. and continued until 11; but did not whiten the ground.

	h.	l.	Remarks.
1791 Jan.	79	17	Winds generally N. W. Weather fair. The mercury rose twice to 79°. It was at and below 32° eleven days in this month. On the 31st pease were up in the garden.
Feb.	81	28	Winds variable ; generally N. W. and S. W. The mercury was at and below 32° three days in this month. On the 9th a luminous column in the south, rising from near the horizon to an altitude of about 45°, continued 12 minutes, and gradually disappeared.
March	87	31	Winds chiefly southerly. Mercury was at 87° five days in this month ; at and above 80°, thirteen days ; and below 32° two days. On the 21st frost killed cucumber vines ; mercury at 33° ; wind N. W. On the 3d there was an Aurora Borealis. It appeared in the N. E. 15 minutes before 7 in the evening, and continued until 10.
April.	94	45	Winds variable ; chiefly S. W. The mercury was at and above 90° six days in this month ; and from 80° to 90° 7 days.
May	97	60	Winds principally N. E. from the 7th to the 18th, with clouds and rain. The rest of the month chiefly S. W. The mercury rose twice to 97° ; and was at and above 90° 13 days in this month.
June	99	67	Winds generally S. E. and S. On the 11th the mercury was at 93° at 1 o'clock P. M ; and at 3 fell to 67°. A heavy thunder shower produced this great and sudden change in the atmosphere. Observations from the 1st to the 21st, during which time the mercury was at and above 90° ten days.

During seven winters, I never saw the ground whitened with snow ; but on the tenth of January, 1800, there fell at Savannah the deepest snow, accompanied with the severest cold, ever remembered in the lower parts of Georgia. By a letter from an intelligent friend, dated Midway, 17 February, 1800, I was informed, that the snow had been three feet deep in particular places, and from sixteen to eighteen inches on a level. A sleet, the same winter, loaded the trees with ice from Broad river (South Carolina) toward the Savannah, a space of ten or fifteen miles, and made great devastation in the forests.

Observations at Savannah, with Fahrenheit's thermometer, in the year 1785, *by T. Matlack, Esq.*

May 29			June			
S	M	T	W	T	F	S
64	67	84	86	85	76	85
83	84	86	84	82	81	76
81	85	78	74	84	84	89
82	84	86	84	92	91	85
					July	
82	85	76	74	80	82	84
86	88	90	96	96½	96	90
85	88	94	83	84	88	86
89	86	82	79	82	92	86
86	84	86	84	86	91	83
78	82	82	83	86	86	

The wells in the town are from sixteen to eighteen feet deep, through a fine sand, and the water is 66 and 67°. This spring having been uncommonly cold, no heat in the air could, at the end of May, have raised that of the water beyond the true medium heat of this country, which, I should think, may be fairly estimated at 66°.

N. B. The initial letters indicate the days of the week; the figures, the highest ascent of the mercury.

Thermometrical observations, by Fahrenheit's scale, in the shaded air, taken at Charleston, South Carolina.

1750		1751		1752		1753		1754		1755		1756		1757		1758		1759	
h.	l.	h.	l.	h.	l.	h.	l.	h.	l.	h.	l.	h.	l.	h.	l.	h.	l.	h.	l.
96	25	94	23	101	18	91	28	93	22	90	27	96	26	90	25	94	25	93	27

1791		1792		1793		1794		1795		1796		1797		1798	
90	28	93	30	89	30	91	34	92	29	89	17	88	22	88	31

Additional remarks.

The greatest range of the mercury in 24 hours, according to observations in Charleston, South Carolina, is said by governor Drayton to be	46°
Greatest range in Salem, according to Dr. Holyoke,	41°
Difference between the greatest range at Charleston and Salem	5°

The coldest day, according to my observation, was 2 January, 1791, when the mercury was at	+17°
The coldest, according to Dr. Holyoke, was 17 January, 1786, and 23 January, 1792, when the mercury was at	—11°
Difference between extreme cold at Midway and Salem	28°

On the 23d of January, 1792, when the mercury fell to 11° below the cypher at Salem, it fell to 20° at Montreal.* The difference therefore between the extreme cold at Montreal and Midway is 37°.

Limited as the Midway observations are, they probably reach nearly to the *extremes* of heat and cold in the climate, in which they were made. In the eighteen years' observations at Charleston, South Carolina, it is observable, that the mercury at no time rose above 101°, or fell below 17°; the greatest ascent being two degrees only above my *maximum* of heat; and the greatest descent, in exact coincidence with my *maximum* of cold. Drayton says however, that the mercury has fallen as low as 13° in the lower country of South Carolina.

In the coolest summers of Carolina, it appears, that the mercury reached 88°; and in eight years (from 1791 to 1798) it never rose above 93°, or fell below 17°. Hewatt† says, he has seen the mercury in Fahrenheit's thermometer rise in the shade to 96° in the hottest, and fall to 16° in the coolest season of the year. "In 1788," governor Drayton says, "it rose to 96°, which is the greatest heat we know of since the year 1752. The difference therefore between our coolest and warmest summers at this time may be supposed to range between 89° and 96°; and the difference of our mildest and severest winters between 17° and 34°."

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* Memoirs of Academy, ii. part 1, p. 118.

† Author of the History of South Carolina and Georgia; whose residence was in Charleston.

Dr. Chalmers, who in 1766 published an account of the weather and diseases of South Carolina, says, that in the remarkably hot summer of 1752 he exposed a thermometer, at the distance of five feet from the ground, to the rays of the sun; and in 15 minutes the mercury rose to the utmost height of the instrument, which was graduated to 120 degrees only, and would have burst the vessel, had he not withdrawn it. From experiments, which he made afterward, he judged that the mercury would have risen 20 degrees higher.

The mean diurnal heat of the different seasons, Hewatt observes, has been, upon the most careful observation, fixed at 64° in the spring, 79° in summer, 72° in autumn, and 52° in winter; and the mean nocturnal heat in those seasons, at 56° in spring, 75° in summer, 68° in autumn, and 46° in winter. According to this estimate, the medium heat of Charleston is 64°, that is, 2° less than Mr. Matlack' estimates the medium heat of Savannah. This difference of temperature might be expected from the difference of latitude of the two places, and the proximity of Charleston to the sea.

The quantity of rain, which fell in Charleston, South Carolina, in seven successive years, according to governor Drayton.

Years	inches	Years	inches	Years	inches
1795	71·8	1798	45·2	1800	51·6
1796	58·1	1799	75·4	1801	42·9
1797	55				

Mean quantity of rain in Charleston for ten years, viz. from 1750 *to* 1786, *inclusively, according to governor Drayton.*

Spring	6·09 inches	Winter	6·01 inches
Summer	12·73		——
Autumn	16·90	Year	42·03